

# Conformal Light Augmented Single Substrate Head-Mounted Display, Phase I

Completed Technology Project (2009 - 2009)



## Project Introduction

To address the NASA Exploration Systems Mission Directorate (ESMD) need for space suit displays and processing cores, Physical Optics Corporation (POC) proposes to develop a new Conformal Light Augmented Single Substrate Head-Mounted Display (CLASS-HMD) for extravehicular activities (EVA), based on radiation-hardened COTS electronic components and a low-profile compact see-through head-mounted display (HMD) design. This approach incorporates compact conformal holographic projection optics instead of bulky lens system, which enables us to meet NASA EVA helmet-mounted display requirements for greater acceptance by astronauts, thus increasing their situational awareness during EVA. In Phase I, POC will demonstrate the feasibility of a space suit HMD system through system design, fabrication, and testing of key components of the system, and analysis of the performance in meeting NASA HMD requirements, as well as for commercial applications. A preliminary proof-of-concept prototype system will be developed, which will demonstrate TRL-4 by the end of Phase I. In Phase II, POC plans to develop a fully functional prototype and demonstrate a space suit HMD system. The results demonstrated will offer NASA capabilities to reduce workload on astronauts performing EVA tasks on the lunar surface.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations	
California	Texas

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.2 Extravehicular Activity Systems
    - └ TX06.2.3 Informatics and Decision Support Systems